

[CLAIMS]

[CLAIM 1]

A fluorescent lamp comprising:

a red color phosphor having a maximum luminous wavelength within the
5 range of about 600 to 620nm;

a green color phosphor having a maximum luminous wavelength within the
range of about 520 to 555nm; and

a blue color phosphor having a maximum luminous wavelength within the
range of about 440 to 460nm, wherein said green color phosphor has only one
10 maximum luminous peak corresponding to the luminous wavelength range of about
520 to 555nm.

[CLAIM 2]

The fluorescent lamp as claimed in claim 1, wherein said green color
15 phosphor is formed by $\text{Zn}_2\text{SiO}_4:\text{Mn}^{2+}$ with Mn^{2+} as an activator.

[CLAIM 3]

The fluorescent lamp as claimed in claim 1, wherein said blue color
phosphor has a luminous spectral distribution of a line shape.

[CLAIM 4]

The fluorescent lamp as claimed in claim 3, wherein said blue color
phosphor has a luminous spectral distribution which half band width is about 40nm
or narrower.

[CLAIM 5]

The fluorescent lamp as claimed in claim 3, wherein said blue color phosphor is formed by one selected from the groups of $\text{Sr}_{10}(\text{PO}_4)_6\text{Cl}_2:\text{Eu}^{2+}$,
5 $(\text{Sr,Ca})_{10}(\text{PO}_4)_6\text{Cl}_2:\text{Eu}^{3+}$ and $(\text{Sr,Ca})_{10}(\text{PO}_4)_6\text{nB}_2\text{O}_3:\text{Eu}^{2+}$.

[CLAIM 6]

A fluorescent lamp comprising:

a red color phosphor having a maximum luminous wavelength within the
10 range of about 600 to 620nm;

a green color phosphor having a maximum luminous wavelength within the range of about 520 to 555nm; and

a blue color phosphor having a maximum luminous wavelength within the range of about 440 to 460nm, wherein said green color phosphor has a maximum
15 luminous peak corresponding to the maximum luminous wavelength of about 520 to 555nm and a side peak having about 20% or smaller relative size in comparison with said maximum luminous peak.

[CLAIM 7]

20 The fluorescent lamp as claimed in claim 6, wherein the side peak existing about 520nm or under of said green color phosphor has about 20% or smaller relative size in comparison with the maximum luminous peak, and the side peak existing about 555nm or larger of said green color phosphor has about 10% or smaller relative size in comparison with the maximum luminous peak.

[CLAIM 8]

The fluorescent lamp as claimed in claim 6, wherein an activator of said green color phosphor is composed of $\text{Ce}^{3+}:\text{Tb}^{3+}$.

5

[CLAIM 9]

The fluorescent lamp as claimed in claim 8, wherein said green color phosphor is formed by one selected from the groups of $\text{LaPO}_4:\text{Ce}^{3+}:\text{Tb}^{3+}$, $\text{La}_2\text{O}_{3x}\text{SiO}_{2y}\text{P}_2\text{O}_5:\text{Ce}^{3+}:\text{Tb}^{3+}$, $\text{Y}_2\text{SiO}_5:\text{Ce}^{3+}:\text{Tb}^{3+}$, $\text{CeMgAl}_x\text{O}_y:\text{Ce}^{3+}:\text{Tb}^{3+}$ and $\text{GdMgBxO}_y:\text{Ce}^{3+}:\text{Tb}^{3+}$.

10

[CLAIM 10]

The fluorescent lamp as claimed in claim 6, wherein said green color phosphor is formed by mixing one selected from the groups of $\text{LaPO}_4:\text{Ce}^{3+}:\text{Tb}^{3+}$, $\text{La}_2\text{O}_{3x}\text{SiO}_{2y}\text{P}_2\text{O}_5:\text{Ce}^{3+}:\text{Tb}^{3+}$, $\text{Y}_2\text{SiO}_5:\text{Ce}^{3+}:\text{Tb}^{3+}$, $\text{CeMgAl}_x\text{O}_y:\text{Ce}^{3+}:\text{Tb}^{3+}$, and $\text{GdMgBxO}_y:\text{Ce}^{3+}:\text{Tb}^{3+}$ having $\text{Ce}^{3+}:\text{Tb}^{3+}$ as an activator and a phosphor of $\text{Zn}_2\text{SiO}_4:\text{Mn}^{2+}$ having Mn^{2+} as the activator.

15

[CLAIM 11]

The fluorescent lamp as claimed in claim 6, wherein said blue color phosphor has a luminous spectral distribution of a line shape.

20

[CLAIM 12]

The fluorescent lamp as claimed in claim 11, wherein said blue color

phosphor has a luminous spectral distribution which a half bandwidth is about 40nm or narrower.

[CLAIM 13]

5 The fluorescent lamp as claimed in claim 11, wherein said blue color phosphor is formed by one selected from the groups of $\text{Sr}_{10}(\text{PO}_4)_6\text{Cl}_2:\text{Eu}^{2+}$, $(\text{Sr,Ca})_{10}(\text{PO}_4)_6\text{Cl}_2:\text{Eu}^{3+}$ and $(\text{Sr,Ca})_{10}(\text{PO}_4)_6\text{nB}_2\text{O}_3:\text{Eu}^{2+}$.

[CLAIM 14]

10 A fluorescent lamp comprising:
a red color phosphor having a maximum luminous wavelength within the range of about 600 to 620nm;
a green color phosphor having a maximum luminous wavelength within the range of about 520 to 555nm; and
15 a blue color phosphor having a maximum luminous wavelength within the range of about 440 to 460nm, wherein said blue phosphor has a luminous spectral distribution of a line shape

[CLAIM 15]

20 The fluorescent lamp as claimed in claim 14, wherein said blue color phosphor has a luminous spectral distribution which a half bandwidth is about 40nm or narrower.

[CLAIM 16]

The fluorescent lamp as claimed in claim 14, wherein said blue color phosphor is formed by one selected from the groups of $\text{Sr}_{10}(\text{PO}_4)_6\text{Cl}_2:\text{Eu}^{2+}$, $(\text{Sr,Ca})_{10}(\text{PO}_4)_6\text{Cl}_2:\text{Eu}^{3+}$ and $(\text{Sr,Ca})_{10}(\text{PO}_4)_6\text{nB}_2\text{O}_3:\text{Eu}^{2+}$.

5 **[CLAIM 17]**

A liquid crystal display device having a fluorescent lamp comprising:

a red color phosphor having a maximum luminous wavelength within the range of about 600 to 620nm, a green color phosphor having a maximum luminous wavelength within the range of about 520 to 555nm, and a blue color phosphor
10 having a maximum luminous wavelength within the range of about 440 to 460nm , wherein said green color phosphor has only one maximum luminous peak corresponding to the maximum luminous wavelength of about 520 to 555nm.

[CLAIM 18]

15 The liquid crystal display device as claimed in claim 17, wherein said blue color phosphor of said fluorescent lamp has a luminous spectral distribution of a line shape.

[CLAIM 19]

20 A liquid crystal display device having a fluorescent lamp comprising:

a red color phosphor having a maximum luminous wavelength within the range of about 600 to 620nm, a green color phosphor having a maximum luminous wavelength within the range of about 520 to 555nm, and a blue color phosphor having a maximum luminous wavelength within the range of about 440 to 460nm,

wherein said green color phosphor has a maximum luminous peak corresponding to the maximum luminous wavelength of about 520 to 555nm and a side peak having about 20% or smaller relative size in comparison with the maximum luminous peak.

5 **[CLAIM 20]**

The liquid crystal display device as claimed in claim 19, wherein the side peak of said green color phosphor existing within the luminous wavelength range of about 520nm or under has about 20% or smaller relative size in comparison with the maximum luminous peak, and the side peak of said green color phosphor existing
10 within the luminous wavelength range of about 555nm or larger has about 10% or smaller relative size in comparison with the maximum luminous peak.

[CLAIM 21]

The liquid crystal display device as claimed in claim 19, wherein said blue
15 color phosphor of said fluorescent lamp has a luminous spectral distribution of a line shape.

[CLAIM 22]

A liquid crystal display device comprising:

20 a red color phosphor having a maximum luminous wavelength within the range of about 600 to 620nm, a green color phosphor having a maximum luminous wavelength within the range of about 520 to 555nm, and a blue color phosphor having a maximum luminous wavelength within the range of about 440 to 460nm, wherein said blue color phosphor has a luminous spectral distribution of a line shape.

[CLAIM 23]

The liquid crystal display device as claimed in claim 22, wherein said blue color phosphor of said fluorescent lamp has a luminous spectral distribution which half band width is about 40nm or narrower.

5